

10079875-022202
2022220 2486400T

THERE IS CLAIMED:

1. A wavelength-tunable laser including a first resonant cavity containing an optical amplifier medium and a reflector external to said first cavity, delimiting a second cavity, and having reflectivity peaks for an integer number N of optical frequencies, in which laser said first cavity is formed of two opposed reflector members that are not wavelength selective and delimit an amplifying first active section coupled to a phase tuning second active section, each of said two active sections is adapted to be connected to its own electrical supply, said second active section has an effective group index that can be adjusted electro-optically as a function of an electrical voltage applied to it, and said first and second active sections have dimensions such that the difference between the optical frequencies of any two resonant modes of said first cavity is never equal to the difference between the optical frequencies of any two reflectivity peaks of said reflector.
2. The wavelength-tunable laser claimed in claim 1 wherein the difference between any two adjacent optical frequencies of reflectivity peaks is constant and the optical frequencies of said reflectivity peaks are interleaved with consecutive optical frequencies of resonant modes.
3. The wavelength-tunable laser claimed in claim 2 wherein the ratio of the difference between two adjacent optical frequencies of two resonant modes to the difference between two adjacent optical frequencies of reflectivity peaks is equal to $N/(N-1)$.
4. The wavelength-tunable laser claimed in claim 1 wherein said external reflector is a waveguide including at least one sampled Bragg reflector grating optically coupled to said first cavity.
5. The wavelength-tunable laser claimed in claim 4 wherein said waveguide includes a plurality of sampled Bragg reflector gratings and each sample of a first grating, with the possible exception of a first of them or a last of them, is between two consecutive samples of a second grating.
6. The wavelength-tunable laser claimed in claim 4 or claim 5 wherein a sampled Bragg grating of said waveguide has a pitch that is not constant.
7. The wavelength-tunable laser claimed in any of claims 1 to 5 wherein said first cavity is formed between a first outside face of said first

section and an outside face of said second section.

8. The wavelength-tunable cavity claimed in any of claims 1 to 5 wherein said first cavity is formed between a first outside face of said first section and an entry face of said reflector.
9. The wavelength-tunable laser claimed in any of claims 1 to 5 wherein the variation of the effective group index of said phase tuning second active section is obtained by a Franz Keldysh effect.
10. The wavelength-tunable laser claimed in any of claims 1 to 5 wherein the variation of the effective group index of said phase tuning second active section is obtained by a Stark quantum confinement electro-optical effect.